

# Transceiver Downlink Module

## 37.5-42 & 47.2-51.4 GHz



Preliminary Datasheet

### QV-TR-DL-4049

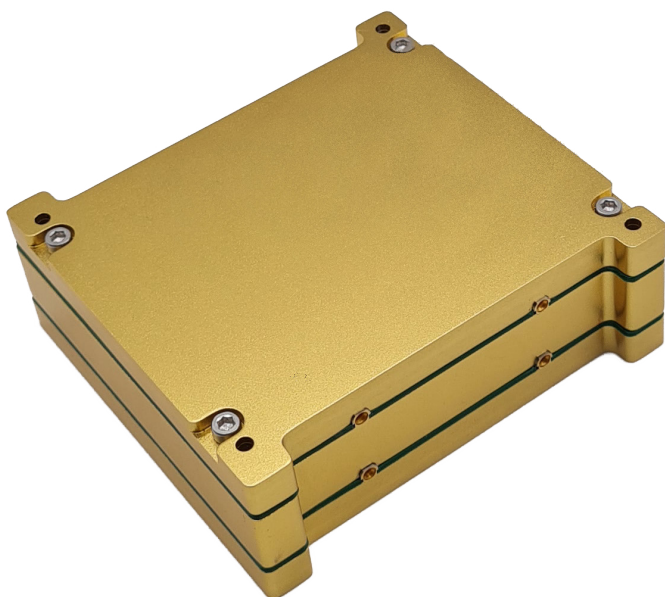
Integrated transceiver downlink module for Q/V-band frequencies.

### Overview

The QV-TR-DL-4049 is a fully integrated stand-alone transceiver module designed for Q/V-band communication systems. The transceiver operates as a wideband up/down converter designed for use in Low Earth Orbit (LEO). It includes an on-board frequency synthesizer with low power consumption in a stackable enclosure.

It also includes a high-precision clock for LO generation; this clock can be used as a reference for other modules, or lock to an external system reference.

This transceiver can be used as a stand-alone up/down converter or combined with a modem/ Software Defined Radio (SDR) enabling a full-function Q/V-band satellite communication system.



### Features

- TX output frequency 37.5-42 GHz
- RX input frequency 47.2-51.4 GHz
- TX IF frequency 1.5-6 GHz
- RX IF frequency 1.2-5.4 GHz



### Applications

- High speed data communications
- Space communications
- IOT
- Earth Observation
- Security
- 5G

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## Specification Overview

### Transmitter

Parameter	Typical	Unit
TX Output Frequency Range	37.5-42	(GHz)
TX Output Linear Power	25	(dBm)
IF Input Frequency Range	1.5-6	(GHz)
IF Input Power	-30 to 0	(dBm)
Conversion Gain	30	(dB)
Gain Flatness	3 (specified over max channel bandwidth (250 MHz))	(dB)
In Band Spurious	-60	(dBc)
Out Band Spurious	-80	(dBm)

### Receiver

Parameter	Typical	Unit
RX Input Frequency Range	47.2-51.4	(GHz)
RX Input Linear Power	25	(dBm)
IF Output Frequency Range	1.2-5.4	(GHz)
IF Input Power	-30 to 0	(dBm)
Gain Flatness	3 (specified over max channel bandwidth (250 MHz))	(dB)
In Band Spurious	-60	(dBc)
Out Band Spurious	-80	(dBm)
Noise Figure	4 (max)	(dB)
Image Rejection	60 (50 dB for some portion of the band (based on COTS filters))	(dB)

## Electrical Specifications

Parameter	Requirement	Unit
External Reference Input	10	(MHz)
Internal Reference Output	10	(MHz)
Frequency Stability	None ( $\pm 1$ max)	(ppm)
Typical Phase Noise		(dBc/Hz)
10 Hz	-40	(dBc/Hz)
100 Hz	-60	(dBc/Hz)
1 kHz	-70	(dBc/Hz)
10 kHz	-80	(dBc/Hz)
100 kHz	-100	(dBc/Hz)
1 MHz	-123	(dBc/Hz)
10 MHz	-140	(dBc/Hz)
DC Supply	9-36	(V)
Power Consumption	9 (max)	(Watts)